

Topic 1 - Introduction to Statistics

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CHAPTER 1

Types of statistics:

Descriptive Statistics: deals with methods of organising, summarising and presenting data in a convenient and informative form. This summary usually uses graphs or numerical summary e.g. mean of data

Some numerical descriptive statistics techniques include:

- Measures of central location
- Measures of variability

Inferential Statistics: methods used to draw conclusions about a population based on information provided by a sample of the population.

Key Statistical concepts:

Population: the set of all of the items of interest

Parameter: a descriptive measure/ characteristic of the population

Sample: a set of data drawn from the studied population

Statistic: a descriptive measure/ characteristic of the sample

With inferential statistics the predicted outcome can never be 100% accurate due to the limitations of the sample data.

The inference has a confidence level and significance level.

Confidence level: the proportion of times that an estimating procedure would be correct, if the sampling procedure were repeated a very large number of times

Significance level: measures how frequently the conclusion will be wrong in the long run.

CHAPTER 2

Variable: any characteristic of a population or sample

Data: observations of the variables (plural for datum)

Types of data:

- Numerical (quantitative or interval) data - data that is in the form of numbers
- Nominal (qualitative or categorical) data - data that is in categories
- Ordinal (ranked) data - data that is categorical and ordered

Numerical data has a great amount of calculations that are permissible to perform on it whereas nominal and ordinal are more restricted. However, these types of data can be converted into numerical data by counting the frequency of each category.

Methods of collecting data:

- Secondary data- data that has already been published by someone else.
- Primary data- data collected by the individual conducting the study
 - Observation - obtaining data by direct observation (i.e. watching what happens and recording it)
 - Experiments - creating a controlled scenario and observing what happens
 - Surveys - creating a number of questions to be answered by a sample and tallying the results of their responses

Sampling

Target population: the population about which we want to draw inferences.

Sampled population: the actual population from which the sample has been drawn.